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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,907	09/17/2003	Ying Tat Leung	YOR920030350 (00280746AA)	2648
30743	7590	11/15/2006	EXAMINER	
WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C. 11491 SUNSET HILLS ROAD SUITE 340 RESTON, VA 20190			CHEN, TE Y	
			ART UNIT	PAPER NUMBER
			2161	

DATE MAILED: 11/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/663,907

Applicant(s)

LEUNG ET AL.

Examiner

Susan Y. Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office is in response to the amendment filed on 08/29/2006.

Claims 1-10 are pending for examination, claims 1-10 have been amended.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 1, the use of the phrase --and/or -- renders these claims indefinite, since this phrase leads to more than one interpretations of the claimed limitations, In re Wilson, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970).

As to claims 2-9, these claims have the same defects as their base claims respectively, hence are rejected for the same reason.

Because the ambiguous nature of instant invention, the following art rejection is to the best of the examiner ascertain.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-10, are rejected under 35 U.S.C. 102(e) as being anticipated by U.S.

Publication No. 2004/0250166 issued to Dahlquist et al. (hereinafter referred as Dahlquist).

Claim 1:

Dahlquist discloses the method to diagnose equipment failures using an integrated approach of case-based reasoning and reliability analysis [e.g., Abstract, Fig(s) 1-7 and associated texts], comprising the steps of:

maintaining a case base database for the equipment [e.g., the units: 31, 35 of Fig. 2; 24, Fig. 3 and 24, Fig. 4 and associated texts];

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receiving an equipment problem description from a user [e.g., the units: 22, 23, 25, etc, Fig. 3 and associated texts; page 2, the sections: 0027-0031 & page 4, sections 0050-0052];

for each component in the equipment, calculating failure probability based on historical failure and published failure data of the components [e.g., the use of analyzer function to analysis any component of the processing and calculating the component failure probability via probabilistic methods over simulated data & Historical Plant data stored on case based Reasoning searching failure library (e.g., Fig. 2) at page 2, Sections: 0029-0031, Page 4, sections 0053-0055];

for each component, calculating probability of matching problem description assuming that a component fails, using case based reasoning [e.g., the case based reasoning unit 35 of Fig. 2 , and the unit 35 of Fig. 5 and associated texts & Page 4, section 0056];

for each component, combining the calculated probabilities to compute an overall failure probability given the historical failure data and published data and the problem description problem description [e.g., page 2, Sections: 0029-0031, Page 4, sections 0053-0057, Fig(s) 2-4 and associated texts]; and

composing a list of component recommendations by ranking components by their overall failure probabilities and retrieving corresponding past solutions from the case base database [e.g., Page 1, section 0012 & Page 4, section 0053, Fig. 6 and associated texts].

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Claim 2:

Except the features recited in claim 1, Dahlquist further discloses that the step of producing a single list of suggested failed components based on historical failure data and published failure data as observed by the equipment user, and the problem description received from the user [e.g., Fig. 6 and associated texts & Page 6, section 0076].

Claim 3:

Except the features recited in claim 1, Dahlquist further discloses that the step of producing a list of probabilities of failure corresponding to the list of suggested failed components, with the probabilities estimated from historical failure data and published failure data, as observed by the equipment user, and the problem description received from the user [e.g., Fig. (s) 2 & 6 and associated texts].

Claim 4:

Except the features recited in claim 1, Dahlquist further discloses that the step of combining probabilities to compute the overall failure probability for each component uses an equipment hierarchy such that component failure probabilities are estimated in a hierarchical manner, calculated from data for the equipment at hand, if there is adequate data, otherwise, from data from an equipment group one level up in the hierarchy, and repeating the process until adequate data is found [e.g., Page 6, sections: 0082-0087 & the top-down plant hierarchy by case based reasoning for fault

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detection, or the down-up plant hierarchy by Bayesian inference for root cause analyzing of Fig. 5 and associated texts].

Claim 5:

Except the features recited in claim 1, Dahlquist further discloses that the step of combining probabilities to compute overall failure probability uses an equipment hierarchy such that historical cases are retrieved in a hierarchical manner, from data for the equipment at hand, if there is adequate data, otherwise, from data from an equipment group one level up in the hierarchy, and repeating the process until adequate data is found [e.g., Page 4, sections: 0054-0055, Page 5, sections: 0063-0065, Page 6, sections: 0082-0083 & Fig(s). 4-5 and associated texts].

Claim 6:

Dahlquist discloses a decision support system to diagnose equipment failures using an integrated approach of case-based reasoning and reliability analysis [e.g., Abstract, Fig(s) 1-7 and associated texts], comprising:

a case base maintenance management system database for the equipment; a decision support system database [e.g., the unit: 31, Fig. 2; 24, Fig. 3 and 24, Fig. 4 and associated texts];

a decision support system client for receiving an equipment problem description from a user [e.g., the units: 22, 23, 25, etc, Fig. 3 and associated texts; page 2, the sections: 0027-0031 & page 4, sections 0050-0052];

a decision support system server receiving input from the decision support system client and accessing said case base maintenance management system database and said decision support system database, said decision support system server including [e.g., Fig. (s) 2-6 and associated texts]:

a real-time decision support system engine for calculating failure probability for each component in the equipment, based on historical failure data and published failure data of each of the component, using reliability theory, and for calculating probability of matching problem description for each component, assuming that a component fails, using case based reasoning, and for each component, combining the calculated the calculated probabilities to compute the overall failure probability for each component given the historical failure data and published failure data of each of the component and the equipment problem description and composing a list of component recommendations by ranking components by their overall failure probabilities and retrieving corresponding past solutions from the case base maintenance management system database [e.g., Page 5, section 0070 - page 6, section 0076 & Fig.(s) 3-6 and associated texts]; and

a case base update processor for copying closed failure transaction records from the case base maintenance management systems database, and extracting the information from these transaction records to obtain the attributes required by said real-time decision support system engine, and indexing each transaction record by the failed component identification and the number of

occurrence of failure of that particular component [e.g., the database 24 real-time updating at Page 5, section 0070-0071, the diagnostics data extracting at Page 5, sections: 0063-0065, the hierarchical indices of the case based decision control system (DCS) at Page 6, sections: 0079-0085 & the ranking, propagating and replacing "the malfunctioning pump with a new one technique" of the decision support tool at Page 7, section 0091-0095, Fig.(s) 2-7 and associated texts].

Claim 7:

Except the features recited in claim 6, Dahlquist further discloses that the decision support system server produces a single list of suggested failed components based on historical failure data and published failure data of each of the components as observed by the equipment user, and the problem description received from the user [e.g., Fig. 6 and associated texts & Page 6, section 0076].

Claim 8:

Except the features recited in claim 6, Dahlquist further discloses that the decision support system server produces a list of probabilities of failure corresponding to the list of suggested failed components, with the probabilities estimated from historical failure data and published failure data of each of the components as observed by the equipment user, and the problem description received from the user [e.g., Fig. (s) 2 & 6 and associated texts].

Claim 9:

Except the features recited in claim 6, Dahlquist further discloses that the decision support system server combines the probability of matching the equipment problem description for each component to compute the overall failure probability for each component using an equipment hierarchy such that the overall failure probability for each component is estimated in a hierarchical manner, calculated from data for the equipment at hand, if there is adequate data, otherwise, from data from an equipment group one level up in the hierarchy, and repeats the process until adequate data is found [e.g., Page 6, sections: 0082-0087 & the top-down plant hierarchy by case based reasoning for fault detection, or the down-up plant hierarchy by Bayesian inference for root cause analyzing of Fig. 5 and associated texts].

Claim 10:

Except the features recited in claim 6, Dahlquist further discloses that the decision support system server combines the probability of matching the equipment problem description for each of the components to compute the overall failure probability for each component using an equipment hierarchy such that historical cases are retrieved in a hierarchical manner, from data for the equipment at hand, if there is adequate data, otherwise, from data from an equipment group one level up in the hierarchy, and repeats the process until adequate data is found [e.g., Page 4, sections:

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0054-0055, Page 5, sections: 0063-0065, Page 6, sections: 0082-0083 & Fig(s). 4-5 and associated texts].

Response to Arguments

Applicant's arguments filed on Aug. 29, 2006 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., 1) the instant uses incoming information as-is and does not classify it; 2) finding the failed component within a machine which is known to have failed; 3) using a common framework that consist of case based reasoning and reliability analysis applies independently in the entire component hierarchy for generating a single list of failed component ranked by probability of failure) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Thus, based on the discussion above, the rejections on record are maintained.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Points of Contact


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan Y. Chen whose telephone number is 571-272-4016. The examiner can normally be reached on Monday - Friday from 7:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeff Gaffin can be reached on 571-272-4146. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Susan Y Chen
Examiner
Art Unit 2161



JEFFREY GAFFIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

November 6, 2006